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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
REVAK, CHRISTOPHER A	
ART UNIT	**PAPER NUMBER**
2131	14

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/614,660	Applicant(s) KIROVSKI ET AL.	
	Examiner Christopher A. Revak	Art Unit 2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) *34-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4-6,8-11*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on January 8, 2001, March 12, 2001, May 7, 2001, June 15, 2001, February 28, 2002, August 8, 2003, and December 15, 2003 are in compliance with the provisions of 37 CFR 1.97. The examiner notes that some of the citations were duplicate citations and the examiner has crossed those citations off the PTO 1449 form. However, the Japanese patent 11110913 and the reference entitled "Robust audio watermarking using perceptual masking" by Swanson et al was not present in the application file. If the applicant wishes to have these documents considered, they are requested to supply the examiner with a copy of the references. The other information disclosure statements have been considered by the examiner.

Response to Amendment

2. The applicant's response to the restriction of claims 1-45 are noted by the examiner for an election without traverse of claims 1-33 wherein claims 34-45 have been cancelled.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that ***the abstract not exceed 150 words in length*** since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

It is noted by the examiner that the abstract exceeds 150 words in length and should be corrected accordingly.

4. The disclosure is objected to because of the following informalities: On page 15, line 6, the status of Serial Application No. 09/259,669 needs to be updated to being U.S. Patent 6,487,574.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1,2-7,9, and 11-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claimed subject matter fails to disclose of statutory subject matter which is just software alone and of itself. The applicant is suggested to amend the claims to either incorporate the subject to be embodied on a computer readable medium or to require the implementation of the use of technology whereby in claim 2, it is recited of encoding that requires the use of technology in order to put something into computer code.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 28-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 28, it is claimed of a "marked signal" and "a marked signal generated in accordance with the following acts" as is recited in the preamble, however the body of the claim recites of "receiving an information pattern.....", "chessboarding the discrete values....", and "encoding the chessboarded discrete values...." which are method steps. It is unclear as to which statutory class is claimed and the examiner is

interpreting the claim as being a method claim. The examiner notes that it is recited of encoding that requires the use of technology in order to put something into computer code, so the claim is considered statutory.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

9. Claims 1-3,5-12,14-23,25-29, and 31-33 are rejected under 35 U.S.C. 102(a) as being anticipated by Girod et al.

As per claim 1, it is disclosed by Girod et al of a method for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, and col. 5, lines 60-63). A received signal (information pattern) contains multiple discrete values (col. 3, lines 7-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element to produce a transform (col. 4, lines 11-19). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 2, Girod et al teaches of encoding the chessboarded, discrete values into a digital signal, wherein the signal is noise in relation to the information pattern (col. 1, lines 64-66, col. 2, lines 10-17, and col. 6, lines 24-26). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 3, it is recited by Girod et al of pseudorandomly determining whether to change each discrete value of the information pattern, wherein the determining is based on a pseudorandom noise signal (number generator) and a key. The discrete values of the information pattern are changed if determined to be by the pseudorandom noise signal (number generator), thereby producing the chessboarded discrete values (col. 1, line 63 through col. 2, line 8, col. 9, lines 35-39, and col. 10, lines 36-40). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 5, Girod et al discloses of chessboarded discrete values being entropy balanced (col. 5, lines 60-63 and col. 7, lines 13-20). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 6, it is interpreted by the examiner that this transform represents an absolutely pattern of chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 7, Girod et al recites of a digital video bitstream (signal) that has a watermark applied to it (col. 5, lines 60-63). It is interpreted by the examiner that this signal includes audio signals since it is disclosed by Girod et al that video-on-demand and MPEG files are used that are known to consist of a combination of video and audio signals (col. 1, lines 1-38 and col. 2, line 9).

As per claim 8, Girod et al discloses of a computer readable medium having program code (instructions), that when processed (executed) by the computer, perform a method for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, col. 5, lines 60-63, and col. 14, lines 45-55). A received signal (information pattern) contains multiple discrete values (col. 3, lines 7-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element to produce a transform (col. 4, lines 11-19). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 9, it is disclosed by Girod et al of a method for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video

bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, and col. 5, lines 60-63). A received signal (information pattern) contains multiple discrete values (col. 3, lines 7-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element to produce a transform (col. 4, lines 11-19). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48). The transform (chessboarded) data is then decoded (un-chessboarded) to retrieve the original discrete values of the information pattern (col. 4, lines 11-33 and col. 5, lines 4-8).

As per claim 10, Girod et al teaches of encoding the chessboarded, discrete values into an original digital signal, wherein the signal is noise in relation to the information pattern (col. 1, lines 64-66, col. 2, lines 10-17, and col. 6, lines 24-26). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 11, it is recited by Girod et al of pseudorandomly determining whether to change each discrete value of the information pattern, wherein the determining is based on a pseudorandom noise signal (number generator) and a key. The discrete values of the information pattern are changed if determined to be by the pseudorandom noise signal (number generator), thereby producing the chessboarded

discrete values (col. 1, line 63 through col. 2, line 8, col. 9, lines 35-39, and col. 10, lines 36-40). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 12, Girod et al teaches of pseudorandomly determining whether to change each discrete value of the information pattern, wherein the determining is based on a pseudorandom noise signal (number generator) and a key. The discrete values of the information pattern are changed if determined to be by the pseudorandom noise signal (number generator), thereby producing the chessboarded discrete values (col. 1, line 63 through col. 2, line 8, col. 9, lines 35-39, and col. 10, lines 36-40). It is interpreted by the examiner that the key to encrypt and decrypt the data is the same since the appropriate key is needed to decrypt the data (col. 10, lines 36-41).

As per claim 14, Girod et al discloses of chessboarded discrete values being entropy balanced (col. 5, lines 60-63 and col. 7, lines 13-20). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 15, it is interpreted by the examiner that this transform represents an absolutely pattern of chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 16, Girod et al recites of a digital video bitstream (signal) that has a watermark applied to it (col. 5, lines 60-63). It is interpreted by the examiner that this signal includes audio signals since it is disclosed by Girod et al that video-on-demand and MPEG files are used that are known to consist of a combination of video and audio signals (col. 1, lines 1-38 and col. 2, line 9).

As per claim 17, Girod et al discloses of a computer readable medium having program code (instructions), that when processed (executed) by the computer, perform a method for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, col. 5, lines 60-63, and col. 14, lines 45-55). A received signal (information pattern) contains multiple discrete values (col. 3, lines 7-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element to produce a transform (col. 4, lines 11-19). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48). The transform (chessboarded) data is then decoded (un-chessboarded) to retrieve the original discrete values of the information pattern (col. 4, lines 11-33 and col. 5, lines 4-8).

As per claim 18, Girod et al discloses of a computer readable medium having program code (instructions), that when processed (executed) by the computer, perform a method for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4,

lines 11-19, col. 5, lines 60-63, and col. 14, lines 45-55). A received signal (information pattern) contains multiple discrete values (col. 3, lines 7-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element to produce a transform (col. 4, lines 11-19). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48). Girod et al additionally teaches of encoding the chessboarded, discrete values into a digital signal, wherein the signal is noise in relation to the information pattern (col. 1, lines 64-66, col. 2, lines 10-17, and col. 6, lines 24-26).

As per claim 19, Girod et al discloses of a computer readable medium having program code (instructions), that when processed (executed) by the computer, perform a method for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, col. 5, lines 60-63, and col. 14, lines 45-55). A received signal (information pattern) contains multiple discrete values (col. 3, lines 7-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element to produce a transform (col. 4, lines 11-19). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48). Girod et al additionally teaches of encoding the chessboarded, discrete values into a digital signal, wherein the signal is

noise in relation to the information pattern (col. 1, lines 64-66, col. 2, lines 10-17, and col. 6, lines 24-26). The transform (chessboarded) data is then decoded (un-chessboarded) to retrieve the original discrete values of the information pattern (col. 4, lines 11-33 and col. 5, lines 4-8).

As per claim 20, it is taught by Girod et al of an apparatus for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, and col. 5, lines 60-63). It is disclosed by Girod et al of processing the digital signal (col. 14, lines 46-54) and it is inherent that a processor is used since processors interpret and execute instructions. A received signal (information pattern) contains multiple discrete values (col. 3, lines 7-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element, that is coupled to a watermarking apparatus (chess boarder executable by the processor) to produce a transform (col. 4, lines 11-19 and col. 5, lines 39-48). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 21, it is taught by Girod et al of an apparatus for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, and col. 5, lines 60-63). It is disclosed by Girod et al of processing the digital signal (col. 14, lines 46-54) and it is inherent that a processor is used since processors interpret and execute

instructions. A received signal (information pattern) contains multiple discrete values (col. 3, lines 7-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element, that is coupled to a watermarking apparatus (chessboarder executable by the processor) to produce a transform (col. 4, lines 11-19 and col. 5, lines 39-48). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48). The transform (chessboarded) data is then decoded (by an un-chessboarder) to retrieve the original discrete values of the information pattern (col. 4, lines 11-33 and col. 5, lines 4-8).

As per claim 22, Girod et al discloses of an information pattern encoding system for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, col. 5, lines 60-63, and col. 10, lines 29-32). The digital video bitstream (signal) that does not have a watermark applied to it, or is unmarked, is commonly referred to as noise as is known in the art. A received signal (information pattern), by a receiver, contains multiple discrete values (col. 3, lines 3-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element that is coupled to a watermarking apparatus (chessboarder) and, is coupled to the receiver, to produce a transform (col. 4, lines 11-19, col. 5, lines 39-48, and col. 10, lines 58-60). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag

scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48). An encoder is used for encoding the chessboarded, discrete values into a digital signal, wherein the signal is noise in relation to the information pattern (col. 1, lines 64-66, col. 2, lines 10-17, and col. 6, lines 24-26). The encoder is coupled to the discrete cosine transform (DCT) element (chessboarder) and receiver (col. 1, line 63 through col. 2, line 17 and col. 10, line 58 through col. 11, line 4). The watermark is embedded into the digital signal (col. 5, lines 4-10).

As per claim 23, it is recited by Girod et al of pseudorandomly determining whether to change each discrete value of the information pattern, wherein the determining is based on a pseudorandom noise signal (number generator) and a key. The discrete values of the information pattern are changed (by means of a value adjuster) if determined to be by the pseudorandom noise signal (number generator), thereby producing the chessboarded discrete values (col. 1, line 63 through col. 2, line 8, col. 9, lines 35-39, and col. 10, lines 36-40). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 25, Girod et al discloses of chessboarded discrete values being entropy balanced (col. 5, lines 60-63 and col. 7, lines 13-20). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 26, Girod et al recites of a digital video bitstream (signal) that has a watermark applied to it (col. 5, lines 60-63). It is interpreted by the examiner that this signal includes audio signals since it is disclosed by Girod et al that video-on-demand and MPEG files are used that are known to consist of a combination of video and audio signals (col. 1, lines 1-38 and col. 2, line 9).

As per claim 27, Girod et al discloses of an information pattern encoding system for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, col. 5, lines 60-63, and col. 10, lines 29-32). It is inherent that an operating system is included in the teachings of Girod et al since it is disclosed of the use of a computer program product is processed on a computer (col. 14, lines) and operating systems are known to as software that controls the allocation and use of hardware resources and is the foundation on which applications, such as watermarking as is taught by Girod et al, are built. A received signal (information pattern), by a receiver, contains multiple discrete values (col. 3, lines 3-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element that is coupled to a watermarking apparatus (chessboarder) and, is coupled to the receiver, to produce a transform (col. 4, lines 11-19, col. 5, lines 39-48, and col. 10, lines 58-60). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48). An encoder is used for encoding the chessboarded, discrete values into a

digital signal, wherein the signal is noise in relation to the information pattern (col. 1, lines 64-66, col. 2, lines 10-17, and col. 6, lines 24-26). The encoder is coupled to the discrete cosine transform (DCT) element (chessboarder) and receiver (col. 1, line 63 through col. 2, line 17 and col. 10, line 58 through col. 11, line 4). The watermark is embedded into the digital signal (col. 5, lines 4-10).

As per claim 28, Girod et al discloses of method for an information pattern encoding system for hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, col. 5, lines 60-63, and col. 10, lines 29-32). A received signal (information pattern), by a receiver, contains multiple discrete values (col. 3, lines 3-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element that is coupled to a watermarking apparatus (chessboarder) and, is coupled to the receiver, to produce a transform (col. 4, lines 11-19, col. 5, lines 39-48, and col. 10, lines 58-60). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48). It is additionally interpreted by the examiner that the signal is unmarked until the watermark is inserted into the signal producing the watermarked, or marked signal or the watermark may not be applied at all producing unwatermarked data (col. 9, lines 64-67). The digital video bitstream (signal) that does not have a watermark applied to it, or is unmarked, is commonly referred to as noise as is known in the art. An encoder is used for encoding the chessboarded,

discrete values into a digital signal, wherein the signal is noise in relation to the information pattern (col. 1, lines 64-66, col. 2, lines 10-17, and col. 6, lines 24-26). The encoder is coupled to the discrete cosine transform (DCT) element (chessboarder) and receiver (col. 1, line 63 through col. 2, line 17 and col. 10, line 58 through col. 11, line 4). The watermark is embedded into the digital signal (col. 5, lines 4-10).

As per claim 29, it is recited by Girod et al of pseudorandomly determining whether to change each discrete value of the information pattern, wherein the determining is based on a pseudorandom noise signal (number generator) and a key. The discrete values of the information pattern are changed if determined to be by the pseudorandom noise signal (number generator), thereby producing the chessboarded discrete values (col. 1, line 63 through col. 2, line 8, col. 9, lines 35-39, and col. 10, lines 36-40). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 31, Girod et al discloses of chessboarded discrete values being entropy balanced (col. 5, lines 60-63 and col. 7, lines 13-20). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 32, it is interpreted by the examiner that this transform represents an absolutely pattern of chessboarded, discrete values since it is disclosed by Girod et

al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48).

As per claim 33, Girod et al recites of a digital video bitstream (signal) that has a watermark applied to it (col. 5, lines 60-63). It is interpreted by the examiner that this signal includes audio signals since it is disclosed by Girod et al that video-on-demand and MPEG files are used that are known to consist of a combination of video and audio signals (col. 1, lines 1-38 and col. 2, line 9). It is interpreted by the examiner that the signal is unmarked until the watermark is inserted into the signal producing the watermarked, or marked signal or the watermark may not be applied at all producing unwatermarked data (col. 9, lines 64-67).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 4,13,24, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Girod et al in view of Wakasu.

The teachings of Girod et al are relied upon for the disclosure of hiding (concealing) a sequence (pattern) of information of multiple discrete values within a digital video bitstream (signal)(col. 1, line 63 through col. 2, line 8, col. 4, lines 11-19, and col. 5, lines 60-63). A received signal (information pattern) contains multiple

discrete values (col. 3, lines 7-10 and col. 4, lines 11-19). The discrete values are placed through a discrete cosine transform (DCT) element to produce a transform (col. 4, lines 11-19). It is interpreted by the examiner that this transform represents chessboarded, discrete values since it is disclosed by Girod et al that entropy encoding includes zig-zag scanning of the quantized coefficients to convert 8x8 blocks to a 1x64 vector (col. 5, lines 44-48). It is additionally recited by Girod et al of pseudorandomly determining whether to change each discrete value of the information pattern, wherein the determining is based on a pseudorandom noise signal. The discrete values of the information pattern are changed (by means of a value adjuster) if determined to be by the pseudorandom noise signal (number generator), thereby producing the chessboarded discrete values (col. 1, line 63 through col. 2, line 8 and col. 9, lines 35-39). The teachings of Girod et al are silent in disclosing of look-up table for changing discrete values. In a substantially similar disclosure, Wakasu discloses of a watermark data insertion position (look-up) table that indicates the position and values pertaining to (chessboarded) watermark data and DCT data (consisting of discrete values) are determined (changed) based upon the row and column numbers in order to perform the DCT transformation (col. 7, lines 21-30,38-44). It would have been obvious to a person of ordinary skill in the art at the time of the invention to have used a look-up table as a means of performing DCT transformations. Wakasu recites motivation for the use of watermark data insertion position (look-up) table by disclosing that the watermark data insertion position (look-up) table indicates what kind of watermark is inserted into which blocks in an image (col. 4, line 66 through col. 5, line 7). The teachings of Wakasu

would have benefited the teachings of Girod et al by overcoming problems in the prior art that when a watermark is embedded into a strong portion in frequency components after it has been frequency transformed, as is disclosed by Girod et al (col. 1, lines 63-67), the watermark can not be removed by a filter as is suggested by Wakasu (col. 4, lines 39-43).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Malvar, U.S. Patent 6,487,574 B1 is a related teaching by the applicant.

Malvar, U.S. Patent 6,029,126 is a related teaching by the applicant.

Kirovski et al, "Robust Spread-Spectrum Audio Watermarking" is a related teaching by the applicants.

Fridrich, "Image Watermarking for Tamper Detection" disclose of watermarking using frequency based spread-spectrum.

Kankanhalli et al, "Content Based Watermarking of Images" discloses of checker boarding watermark patterns.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher A. Revak whose telephone number is 703-305-1843. The examiner can normally be reached on Monday-Friday, 6:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on 703-305-9648. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Revak
AU 2131
6/9/04

CR
June 9, 2004